

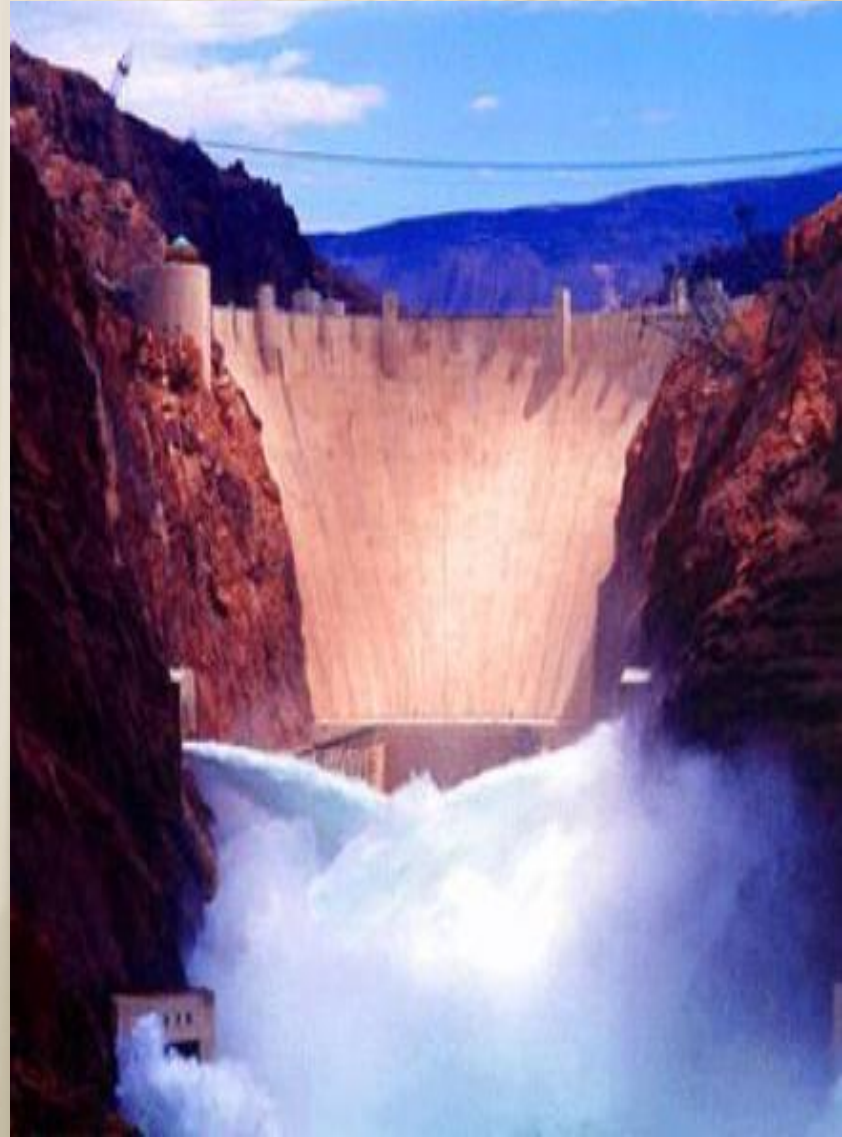
RENEWABLE ENERGY AND THREE R's

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RENEWABLE ENERGY

HYDROELECTRIC

- ✗ Hydropower – Converting flowing water into usable energy
 - + Most of this water comes from rivers and is released through turbines that make energy
 - + largest source of renewable energy
 - + Provides 10% of the nation's electricity produces hydropower
 - + Does not release pollution, it can possibly harm fish and wildlife, displace people, and alter the quality of water



BIOMASS/BIOENERGY



- ✗ Biofuels – taking organic wastes from industrial processing, such as forestry, agriculture, and wood products to make fuel
 - + Ethanol is one of the primary biofuels
 - + Can replace gasoline, diesel, or coal
 - + Provides 1% of the nation's electricity and more than 10% if the nations fuel
 - + Does release pollution and uses food resources

GEOTHERMAL ENERGY

- ✗ Geothermal energy - produced from naturally occurring steam and hot water from under the Earth's surface. The steam rotates a turbine, which powers an electric generator.
 - + About 0.2% of the nation's power
 - + Steam and hot water can also heat buildings
 - + Hard to find



WIND ENERGY

- ✗ Wind energy - wind rotates blades around a hub, which is connected to a shaft which spins a generator
 - + About 0.1% of the nation's power
 - + Can be large for making lots of electricity for a city, or small for generating electricity for a home
 - + Can be expensive and disruptive to birds



SOLAR POWER



- ✗ Solar – makes use of photovoltaic cells produce electricity from sunlight
 - + These cells absorb sunlight, which frees the electrons from their atoms and allows them to generate electricity
 - + Provides 2% of the nation's electricity
 - + Costs a lot and only works when sun is shining
 - + Macy's converting almost all stores and offices to solar power

REFINERIES TO RENEWABLES

- ✗ As communities become more concerned about the affects of fossil fuels, clean and renewable energy technologies will play a greater role in meeting future electricity demand
- ✗ Many former refineries and other contaminated sites have thousands of acres of land, and may be located in places that can use wind and the sun for power
- ✗ Chevron built a wind farm at one old refinery in Casper, Wyoming and began making energy in December 2009.
 - + Chevron's first wind farm, it creates new life for the formerly old refinery site.
 - + <http://www.chevron.com/news/currentissues/casperwind/>
- ✗ Chevron is also turning an old refinery in California into a solar array (power plant) using new technologies

REDUCE, REUSE, RECYCLE

REDUCE, REUSE, RECYCLE



- × Reduce the amount of trash
 - + Between 1960 to today the amount of trash thrown away by each person in the use has doubled, now 4.5 pounds per day
- × Reuse containers and products
 - + More than 55 million tons of waste put into landfills each year
 - + Almost 30% is from packaging
- × Recycle as much as possible and buy products with recycled content.
 - + Reduces waste, creates jobs, saves energy, conserves resources, helps you
- × Why?
 - + Saves natural resources
 - + Protects the environment
 - + Saves money and space

COMPOSTING

- ✖ Yard trimmings and food residuals make up more than 25% percent of the waste put in landfills
- ✖ That's a lot of waste to send to landfills when it could become useful and environmentally beneficial compost instead!
- ✖ Compost is organic material (leaves, food waste, grass clippings) that can be used as a fertilizer/soil to grow plants
- ✖ Composting not only reduces landfill waste but also:
 - + Prevents Plant Diseases
 - + Reduces Fertilizer Use
 - + Increases Health of Plants (more fruit and vegetables)
 - + Saves money

AIR COMPOSTER



✗ STEP 1: FIND STUFF



✗ STEP 2: BUILD FRAME

AIR COMPOSTER



✗ STEP 3: PUT IT TOGETHER



✗ STEP 4: LOAD IT UP

SETTING UP AIR COMPOSTER

- ✗ Choose a warm sunny spot to put the tumbler.
- ✗ Save your vegetable kitchen scraps to add to the tumbler, avoid adding the seeds of vegetables
- ✗ Adding grass clippings and other non-woody garden waste
- ✗ The contents of the composter need to be moist but not wet.
- ✗ Tumble your composter at least once a week.
- ✗ In a composter that is working well, the contents should feel warm to the touch.
- ✗ If your composter is smelly, add a handful of garden lime or dolomite.
- ✗ Don't overfill the tumbler - try and only fill 2/3's to 3/4's full at anytime.
- ✗ Depending on how well you balance the moisture level in the tumbler, you will get 2 or 3 loads of rich compost a season.

WHAT TO DO WITH AIR COMPOSTER

- ✗ The compost is ready if, if it forms clumps resembling freshly laid horse poop and has no recognizable veggie scraps remaining.
- ✗ If the composter is working correctly, any seeds in it should break down, or be killed by the heat. However, to avoid capsicums and pumpkins popping up where ever you spread the compost - just avoid putting them in.
- ✗ Chop up your garden cuttings into small pieces or shredding the waste before putting them into the composter will speed their breaking down into compost.
- ✗ Woody garden waste can be used, but only if shredded first.
- ✗ Smelly composters:
 - + Too wet
 - + Have meat tainted scraps
 - + Not turned enough
 - + Solve by adding lime and/or dolomite

WORM COMPOSTING

- ✗ Worm composting is a method for recycling food waste into a rich, dark, earth-smelling soil conditioner (fertilizer)
- ✗ Advantage of worm composting is that this can be done indoors and outdoors
- ✗ Allows year round composting and also provides apartment dwellers with a means of composting
- ✗ <http://vimeo.com/2235946>



MAINTAINING WORM COMPOSTER

- ✗ Can be kept indoors or outdoors
- ✗ Temperature must 40-80 degrees F
- ✗ They like the dark, NO light
- ✗ Out of the hot sun and heavy rain
- ✗ Add ½ pounds of food every day
- ✗ Wait 1 to 2 months and add new trays
- ✗ In 2 to 3 months compost is ready for plants
- ✗ “Tea” is also great as a fertilizer like Miracle Grow
- ✗ Once you empty compost, start over with bin

WHAT NOT TO COMPOST

- ✗ Coal or charcoal ash
 - + Might contain substances harmful to plants
- ✗ Dairy products (e.g., butter, milk, sour cream, yogurt) and eggs
 - + Create odor problems and attract pests such as rodents and flies
- ✗ Diseased or insect-ridden plants
 - + Diseases or insects might survive and be transferred back to other plants
- ✗ Fats, grease, lard, or oils
 - + Create odor problems and attract pests such as rodents and flies
- ✗ Meat or fish bones and scraps
 - + Create odor problems and attract pests such as rodents and flies
- ✗ Pet wastes (e.g., dog or cat feces, soiled cat litter)
 - + Might contain parasites, bacteria, germs, pathogens, and viruses harmful to humans
- ✗ Yard trimmings treated with chemical pesticides
 - + Might kill beneficial composting organisms